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it evident, as I think, that the latter was such as the former would produce if cultivated. If guessing be allowable, I would say that the originals of the European cultures emanated from near the Atlantic coast, in rich soil, alluvial deposit, just such as is most favorable to a very vigorous growth; that to all intents and purposes they differ not from what is recognized by us as *R. lucida* (*R. humilis*, var. *lucida*).

Another problem, perhaps still more difficult, is to know what are the actual relationships, between eastern forms of the *humilis* group and those of the south and west. Are they in reality but one polymorphous species, the transitional forms due to difference in location and climate—in a word—to environment? Or are they distinct species, the intermediate forms hybrids? To the solution of this problem I bespeak the indulgent aid of all botanists, especially the Eastern, reminding them of the possibility of crossing between species and the production of fertile hybrids; and that environment modifies all forms but in all probability the most markedly those of hybridic origin.

Botanical Notes.

Corrections. There are two mistakes in the May BULLETIN. Professor Bailey's report of the blooming of *Houstonia cœrulea* on February 26th, is just a month earlier than what he intended to report, March 26th. In the enumeration of Richmond County plants *Aster cordifolius*, var. *glabratus*, should read var. *lævigatus*, under which name it was published by Professor Porter in the March issue; the other name had been used in manuscript and was inadvertently retained when Mr. Hollick made up the copy.

Pinus rigida, Mill. At South Amboy, New Jersey, a short time ago, I noticed some young shoots about sixteen inches high growing from the stump of a pine about six inches in diameter. While examining the shoots, I was interested to note that the primary leaves were about one and a quarter inches in length, and from their axils grew fascicles in some cases of four leaves, though the majority of the secondary leaves were in threes.

At Cliffwood, New Jersey, I have since found a small pine

*See Journal of the Trenton Nat. Hist. Soc. No. IV., *N. A. Roses*, etc.

about three feet in height, on a branch of which I detected a fascicle of four leaves, the primary leaves being about half an inch in length. Both of the specimens mentioned above have been carefully compared with the collection of pines in the herbarium of Columbia College, and sections of the leaves have been examined under the microscope. The result of the comparison and examination leave but little doubt that the specimens referred to belong to the species of pine named above. J. I. NORTHROP.

Viola palmata, L. While botanizing recently at Pelham Manor, New York, my attention was called to the great number of plants of *Viola palmata* bearing leaves that varied from reniform to those cut and divided into linear lobes. I examined the flowers and found them almost as varied in form as the leaves. In some the spurred petal was hardly noticeable, and in another two of the petals seemed to be entirely missing. In others the lateral petals were very dissimilar both in shape and in size, while in a few cases I found the petals were lobed or parted in a manner that seemed to follow no law. One of the most curious forms is shown in the cut.

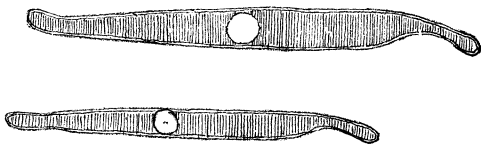


At first it seemed that the tendency to variation so often shown in the leaves of *Viola palmata* had extended to its petals, but in a swamp near the locality mentioned above I found many plants of the same species in which the leaves were simply toothed, and among them a few that bore flowers with cut petals, so in this case the variations had commenced with the flower.

The only other difference I noticed between the plants with the divided leaves and those that grew in the swamp, was the greater size of the plant, and the greater length of the sepals in the flowers of the latter. J. I. NORTHROP.

Synedra pulchella, Kütz., var. *abnormis*, Macchiati. In the April number of the Bulletin of the Italian Botanical Society in Florence is an interesting and valuable contribution to the literature of the Diatomaceæ from the pen of Macchiati. Some algæ found in the vicinity of Sassuolo, furnished, among other diatoms, an abnormal form of *Synedra pulchella*, which, on account of the

absence of the median line, as well as the circular definite pseudonodule, which distinguish the *S. pulchella* of Kützing from all the other species of the genus, he classifies as a new variety. One end



of the valve will be seen to have an extraordinary and partly constricted bent apex, while the other appears complete in its formation. The description and figure of *S. pulchella* will be found in the works of the following authorities: Van Heurck, Ralfs in Pritchard's Infus., Wm. Sm. Syn. and Kützing.

E. A. SCHULTZE.

The Journal of Mycology. Volume v, No. 1 of this publication appears as the quarterly bulletin of the section of vegetable pathology, U. S. Department of Agriculture, March, 1889, prepared under the direction of the Secretary of Agriculture by B. T. Galloway, chief of the section. It is a pamphlet of 50 pages, and is embellished by 8 plates, illustrating papers by Professors Kellerman and Swingle, Miss Knowles and Mr. Ellis. Other botanical contributions are by Professor Halsted and Mr. F. W. Anderson.

Reviews of Foreign Literature.

A Monograph of the British Uredineæ and Ustilagineæ. (8 vo., pp. 347, London, 1889).

Under the above title Mr. C. B. Plowright, F.L.S., has prepared a book of three hundred and fifty pages containing much valuable matter concerning rusts and smuts—two groups of fungi specially destructive to cultivated crops. Full descriptions of the British species of rusts and smuts are given, and an account of their life history, as far as this important point has been determined. There are chapters upon mycelium, spermatogonia, æcidiospores, uredospores, teleutospores, etc. Following these are others, treating of heterocism, spore-culture, artificial infection of plants, and two indices, one of the species and another of the host plants. The fact that members of the Uredineæ may have more than one form, living, possibly, in one form upon one